

British and German Industrial Conditions

A COMPARISON.

By ANDREW STEWART, M.I.E.E

SIXPENCE NET.

A reprint, with additions, of a series of articles which appeared in "Electricity," April 21st to June 2nd, 1916.



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PREFACE.

WHEN the author set out on his first visit to Germany he was assured that he was going to see the country that would ultimately rule Europe. There can be little doubt that Europe has had a fairly narrow escape !

Since then many years have elapsed, and the visits have been repeated. Not only so, but German methods and competition have been studied not only in England but in other European countries, as the author's business has brought him into contact with German products in most of the important markets of Europe.

When asked to pen this series of articles now amplified and republished, he little contemplated that he would receive so many flattering communications nor invitations to supply more, as if the tale of Teutonic enterprise was a bottomless literary pit from which unlimited tales of German success could be drawn. The tale is simple : specialised education and organised business can win against most other qualities ; our enemies had both to a degree unknown elsewhere.

Success, as many German philosophers have taught it, comes to those who have the courage, the will, the education, and the organisation to command it. We also have these qualities, the first two in greater measure than the last two ; all are necessary, and if the following pages help to broaden the basis on which our national greatness rests, we shall in future hear little about the " Pestis Teutonicus " in business or politics.

June, 1916.

ANDREW STEWART.

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British and German Industrial Conditions.

I.—THE CASE IS STATED.

SOMEONE has said that industry is the goose that lays the golden eggs. As the war proceeds these golden eggs are becoming scarce to an ever-increasing proportion of the population of Europe. We Britons feel the effects less than anyone else, but we have to meet a steadily increasing demand on our pockets. We are advised to be economical, as the drain will be greater still, though sometimes the people who lecture us on economy are the same people who may be seen occupying guinea or half-guinea seats at the theatre, or sitting in front of sparkling wine at dinner, for war-time economy, like many other virtues, is sometimes preached by people who don't practise the doctrine they expound.

The problems which are most pressing and will have the most profound influence on our national life are those which will become acute when the war is over; the inevitable readjustment to peace conditions is likely to produce stress and upheaval which is little contemplated now.

The sudden diversion of our great manufacturing resources to peaceful products will be as great a task as the converse process has been, and if there is not a great and immediate demand for our products which will absorb labour as fast as it is freed from the Army and from munitions factories, the resultant unemployment will be so productive of popular discontent

that it may tax the ingenuity of statesmen, and provide thoughtful if not indeed anxious moments for those responsible for the State.

There are great new factories, and many old ones, all devoted to the production of munitions of war. Many of these will no doubt ultimately be adapted to peaceful work, but some may not, as they are ill-adapted to peaceful industrial processes unless by very considerable weeding out of the plant—a process which may prove almost as expensive as new works. Two years of high-pressure output and imperfect and hurriedly made repairs has left much of the equipment in a worn-out condition, and unless satisfactory provision has been made out of profits for replacements, the outlook cannot be described as promising.

The problem of securing a large share of the trade hitherto handled by our enemies, and the no less serious difficulty of recovering the business which has been diverted to enterprising neutrals, is likely to give rise to many conflicting views, and produce many remedies. Some of these remedies while productive of good to one industry may prove disastrous to another.

Shall we obtain the trade which the Central European Powers had, and, having obtained it, can we keep it? Some reasons for doubting this will be set forth in the following article, and will we hope help our readers to form some idea of the considerations involved in the solution of what is probably the greatest problem that has ever faced this country, for, apart from its moral aspect, if we fail to “dig ourselves in” to the markets of the world, the vast expenditure, and still more serious loss of some proportion of the flower of our Empire’s manhood, will have been lost.

The solution is dependent as much on the attitude of labour as upon the enterprise of the employer, for unless the restrictive regulations of trades unionism are relaxed it will be impossible to deal either with the volume of enemy trade or compete with it in price.

The rise of German industry has been a matter of less than half a century, a rate of progress unexampled in history. At the close of the Franco-Prussian war

Britain was the workshop of the world, and the period of prosperity which followed was due to the fact that in this country we were able to make all that was required to replace the ravages of the war, and to the still more important fact that the war had not lasted long enough to exhaust either combatant.

The economic union of the German empire which soon followed, and the recognition by the leaders and teachers of Germany that only by industrial supremacy could they hope to gain the wealth and influence which would enable them to consolidate and develop their empire, led to developments which placed Germany in a position to challenge Europe in industrial matters. How far she succeeded is evident from the discussions which enlivened the business and political world in pre-war days, and from the fact that she had extended her commercial activities to every part of the world, and in some industries had even gained a predominant position.

How much of this progress was due to the ineptitude of her rivals, and how much to the organising ability and enterprise of our Teutonic rivals, is not easily determined. Opinion is not so sharply divided on one thing, namely, that but for a colossal blunder on the part of German statesmen she might have succeeded in achieving by peaceful means what she has failed to do by the sword.

A nation's greatness, so far as material things go, may be no more permanent than the kind of prosperity which is aptly illustrated by the Lancashire proverb, "clogs to clogs in three generations." Germany may have had her three generations of prosperity, she may revert to the group of small kingdoms from which the empire was evolved, or the characteristics which enabled her to reach a commanding position in fifty years may enable her to survive, and emerge from the ordeal, poor in money and men, but possessing the characteristics which may enable her to reconstruct from the ruins another no less formidable empire. This is possible, as you may spend money, you may kill men, but, so long as any units of

the population remain; you cannot kill national characteristics.

German thoroughness in education, science, and in business, nay, even in warfare, for who can deny that the thoroughness and heartlessness which have always been characteristic of German business methods, have not been demonstrated on the field of battle, may win through in the peaceful struggle to follow.

Germany's failure to keep the path which would have been safe, and probably satisfied her ambitions more slowly but more surely, was apparently due to her judgment not having kept pace with her material prosperity, the defect which afflicts most democracies which grow affluent quickly.

In all large German cities incomes which a generation ago were only reached at a mature age now became common at a comparatively early age, and with this growth came luxury and self-indulgence, the twin vices of affluence. Those of us who knew Berlin and similar German cities fifteen years ago, and compared them with the pre-war days, could not help commenting on the change which had taken place in that brief period.

Fifteen years ago there was little night life, yet prior to the war Berlin rivalled, if not indeed surpassed, any other European city in the variety and decadence of its night life. There seemed to be an impression that material prosperity conferred the right to do as one pleased. That this was a dominating idea which pervaded all classes is clear from the lack of restraint which characterised the actions of the German army in Belgium and Northern France, and in the idea which led the ruling classes to suppose that they could impose their particular brand of "Kultur" on the rest of the world.

It seems to prove that a whole nation may be too small-minded to be great. It is not a question of education. The average German was probably the best educated man in Europe, but a man may have the whole curriculum of a University crammed into his cranium and still be a man with a small mind and

a poor judgment. He may even achieve some degree of material prosperity yet exhibit no sign of that intellectual superiority which distinguishes some men. When this is the case we find people who overfeed, over-drink, or otherwise outrage the decencies of civilisation; and was not the German appetite in these directions the standing joke of neighbouring nationalities?

Whether we as a nation are suited by education, temperament, and organising ability to acquire and hold much of the trade and commerce which Germany had, and might still have held, but for the fact that she attempted to "bite off more than she could chew," to use the expressive phrase of our American friends, is a point on which opinions differ.

There is no doubt that Germany was, and in fact still is, by far the best organised country in the world, her industrial, social, and educational organisation has been so frequently described that I will not do more than refer to it. What, however, is necessary is that we should have a clear idea of some important factors in her industrial success, factors which will tell in her favour when she resumes her position, or as much as is left to her when the war is over.

The story of how Germany captured the world's dye trade, and acquired an unchallenged position in the chemical trade, and the phenomenal growth of her engineering and electrical industries, are typical of the virility and enterprise of our Teutonic neighbours. These achievements, all a matter of some thirty years, have led many people to doubt if a race displaying such characteristics can really be crushed for more than a brief period, if at all. This is an opinion largely held among neutrals, and one to be reckoned with after the war.

It may be, of course, that France and Britain may profit by the lessons learned at such great cost, and develop fresh enterprise and initiative. Treitschke, the German historian, tells us that Germany's great forward movements invariably followed great wars, in which the people were schooled in industry and self-sacrifice.

That the greatest of all forward movements followed the Franco-Prussian war there is no doubt, and that the present war was to be the last stage in German world conquest was clearly in the minds of many Germans. The will to achieve, if not by fire and the sword, then by commerce, is not dead in Germany, and even if she is stripped of her colonies, and her Customs and State railways are in the hands of the Allies, she is certain to put up a good fight in the future.

She may be unable to give long credit, which has been so helpful to German commerce; she may be unable to finance the great industrial ventures, such as subsidised shipping, trade groups, and cartels. Poor in resources, the Central Empires may achieve by low prices and quick cash transactions some degree of affluence in a comparatively short time. Any Customs union that the Allies may form against the Central Powers will only have the effect of causing the German business man to follow the line of least resistance, and turn his attention to neutral countries where such restrictions do not exist, and so the German and Austrian manufacturer would become a keen competitor with us on practically even terms in every neutral market; the higher the tariff wall the Allies have, the more fierce will be the German competition in such countries as are not fenced off, such, for instance, as South America with its huge German population.

That German and Austrian goods have been both good and cheap is clear from the difficulties which are now experienced in obtaining certain goods. British dyers now advise purchasers that, although every care is taken that dyes shall be fast, they refuse to guarantee them against sun or washing. You cannot at present buy a satisfactory enamelled iron vessel nor a good glass chimney for a lamp.

These facts tell in business, for unless a rapid improvement in the quality of the Allied products takes place, these goods will find their way from Germany and Austria into all the markets of the world, tariff or no tariff. It is the same in machinery or any other high-grade product. The writer has to make and sell

machinery not only in Great Britain, but in all the markets of Europe. The most important pre-war competitor was Germany. The high tariffs of France and Italy did no more to keep the German product out of these countries than the almost inappreciable tariff of Belgium or the Free Trade of England. In fact, whether the tariff wall was high, or low, or moderate, or did not exist at all, the German was there just the same, and much the same thing will happen after the war unless a broader and more enterprising policy is followed.

Germany has always enjoyed advantages of another kind which have enabled her to achieve that degree of productive efficiency without which she could not have held the markets of the world. On what basis does this productive efficiency rest? It is apparently a broad basis, for had the great industrial structure been erected on a narrow basis or on a single advantage it might have toppled over long ago. A period of trade depression might, for instance, have shattered it beyond recovery, instead of which Germany's industry weathered these storms well, though it must be admitted that periods of depression and dull trade were usually felt with greater severity than in England.

The basis on which German trade is built is somewhat difficult to define, especially as some people ascribe it to one thing and some to another, as if any one factor could determine success! The fact is that national success, like the success of business undertakings or of individuals, is due chiefly to the algebraic sum of a number of advantages and disadvantages. Few have all the elements of success, some advantages are offset by other things prejudicial to success, and both are found in every case to a greater or less degree; if the advantages outweigh the disadvantages the result is success; if on the other hand, some undoubted advantages are prejudiced by other negative factors of overwhelming magnitude, the result is failure!

Germany's success has generally been ascribed to tariffs, scientific management, specialisation, education, industrial banks, cartels, low railway rates, export

bounties, beer and sausages (the latter, it is alleged, produce an aggressive and fearless race of men). There may be others, but these are the most common. The faculty for making the most of all these advantages is supposed to be inherent to the Teutonic nature, and it certainly is true that Germany has made the best of her undoubted genius for organisation whether in business, education, or in industrial development.

The first and most obvious step will probably be the attempt to shut the Central Empires out of the markets of the Allies by means of a tariff arrangement. To what extent we shall be involved one cannot tell, but our resourceful enemies, whose ingenuity and adaptability cannot be denied, will turn to the neutral markets of Europe, Asia and America. In South America alone, the German has great possibilities, the banks are largely in the hands of Germans or people of German extraction. Even where racial considerations do not apply, there is not that legacy of hate which exists in Europe, where some member of nearly every family has been sacrificed to the Prussian God of Militaryism. In these countries price will tell even if pro-German sympathies do not exist, and it is certain that the greater the area closed to German trade, the keener will be her competition in the markets which remain. With her great manufacturing resources and a chastened and industrious population, she may make up in concentrated competition what she failed to accomplish with that historic concentrated essence of hate, the Hymn of Hate.

What then shall we do to so improve our organisation that we can compete with Germany on even terms in neutral countries? A tariff is at best a negative remedy, it may keep others out of our markets, but does not help us to compete in neutral markets, as I shall show later, it may even handicap us in the latter case. What are the positive advantages?

II.—EDUCATION AND ITS RESULTS.

First among these comes education. Among the war-time economies we learn that local authorities all over the country are saving on the education rate. The London County Council estimates that it will save some £400,000 on education; of this amount nearly one-third is teachers' salaries. Probably as much again is saved in the provinces.

We begin our economies by starving the brains of those who will fight the commercial battle of to-morrow! The battle of life is to the mentally swift, and to the intellectually strong. When the guns have ceased, our enemies will bring their subtle ingenuity to bear on the trade war, and the brains which invented gas clouds, asphyxiating shells, and fire sprays, will invent new trading expedients. The splendid educational resources of the Industrie Schulen (School of Industry), the Werkmeisters Schulen (Master workman's school), Höhere Schulen (high trade school), the Technicum and University produce well-trained men equipped for every branch of industry from the better trained artizan, the foreman, and the works manager, to the industrial leader, all equipped for the battle of life in a manner unrivalled anywhere, except by the United States of America, where wealthy men have by their generosity, done great things for the Republic.

Moreover, very effective use is made of these schools. In England, a working-class boy may leave school at about thirteen, and he need never again cross the doorstep of an educational institution. In Germany, an employer is compelled to allow an apprentice to attend a continuation school at least ten hours per week, *i.e.*, equal to over one day per week, without loss of pay. In England even the most diligent apprentice could not, even if he would, attend evening classes half as many hours. I have seen apprentices who had been at work from 6 a.m. and awake much earlier, striving to keep awake in an evening school.

Their German competitors get far more schooling

during hours when they are physically capable of profiting from the instruction.

This is not all. The State support given to these educational institutions is remarkable. In the year before the war the German Government spent, chiefly on scientific scholarships tenable in universities and colleges, six times as much as the British Government. Not only so, the salaries and status of the teachers are greater. Berlin Technical High School costs over two million marks a year; one and one-third million marks goes in salaries to professors and their assistants. The salaries paid are such as will attract the best brains in the country, and have no parallel for a similar school in any other part of the world.

When the new technical high school in Danzig was commenced, six million marks were voted for the building and equipment.

Three million marks were voted for the mining school at Aachen, a small Prussian town of less than 200,000 inhabitants, while two million marks were voted for a chemical school in Hanover. These instances can be multiplied many times. With such prodigal expenditure on scientific training for her citizens, need we be surprised at the excellence of German engineering and chemical products either in peace or war?

I will cite only two instances of the advantages Germany has derived from her educational system. The original natural dye stuffs were indigo, cutch, madder, cochineal, logwood, fustic, and so on. In 1856 Dr. Perkin first produced a practical aniline dye in London. Pullar, a Scotch dyer, first made practical use of it, and founded the great dye works which bear his name, but it was German chemists who built a great dye producing industry which almost monopolised the world's dye trade, and that without the slightest assistance from tariffs, for the German dye market has never been protected by a tariff; it was German brains *versus* the rest of the world, and they won on their merits.

As if to kill any possibility of British chemists achieving success in this industry, the British law limits the

use of alcohol for industrial processes ; this could not have been done had we possessed an educational system that equipped the civil servant or member of Parliament with even a rudimentary knowledge of chemistry ; in fact, Civil Service examination papers show that classical knowledge is considered of greater importance than modern languages or science, and these civil servants often have the power to decide on technical matters relating to commerce which call for specialised knowledge. It should be pointed out, however, that the educational standard of the average British civil servant is higher than that of any country in the world, higher even than the German, but he lacks the specialised knowledge of the German. This law, *inter alia*, deprived us of a cheap home-made fuel for motor-cars, and her possession of a well-developed alcohol producing industry has enabled Germany to carry on the war with practically no petrol supply, as she is shut out from the important oil supplies of the world.

To such an extent is the application of science to industry carried that one large German works listed nearly one thousand different synthetic dyes. It had a factory which cost thirty million marks ($1\frac{1}{2}$ million pounds), and employed 300 qualified chemists and 200 engineers with a college diploma, all engaged in developing new processes, and supervising an army of workpeople. This from an Englishman's invention.

Another instance was the discovery of artificial indigo by Dr. Baeyer of Munich. Before this process was perfected in 1897, the German Empire imported vegetable indigo, chiefly from India, to the value of over a million pounds a year. A few years later Germany, instead of buying the material, was selling artificial indigo to the value of nearly four millions a year. Indian exports of indigo have fallen from $3\frac{1}{2}$ million pounds per annum to less than a quarter of a million, and about 90 per cent. of the world's consumption of indigo is artificial. Indian trade, it will be noted, was " hit " to the extent of over three million pounds a year.

The other instance is the electrical industry.

Humphry Davy discovered the electric arc, Michael Faraday the dynamo electric machine, Sir Joseph Swan made a practical incandescent electric lamp. Robert Davidson made the first electric railway as far back as 1837. British brains can be said to have laid the foundations of electrical science, but who commercialised it?

German electrical machinery and electrical equipment have penetrated into every corner of the world. Great electric power stations with German machinery supply electric power to British mines in Africa. German machinery supplies electric power to staple industries in England. Here again the German built a profitable business on foundations laid in Britain.

We on our part retaliate by reducing the money we spend on education, and if this were not enough, we limit the importation of paper, the chief medium in the diffusion of knowledge; while materials for the production of beer get off lightly—indeed, brewing gets more consideration than any other industry, as if it were a national asset!

What has beer done for the nation, beyond providing architects with opportunities to design imposing asylums and workhouses? A man may starve his intellect, but the artizan may not go without his glass of stout, nor the labourer without his pot of "bitter." This war seems to be a stout and bitter contest! To the ordinary mortal it would seem that we were more in need of brains than beer.

Early in the war, when attention was focussed on the extent to which intemperance had interfered with the production of munitions, and delayed the sailing of transports—difficulties that many large employers of labour experience during peace times, there seemed a chance that this evil might be dealt with effectively—a chance that, considering the state of public opinion and the example set by our Allies, might never occur again. Yet the opportunity was allowed to pass, and Britannia that has ruled the waves for a thousand years has not succeeded in ruling the booze for a day!

Despite restrictive legislation our national drink

bill shows no sign of shrinkage, and we continue to spend 160 million pounds a year on an industry that does not even pay the country from an industrial point of view, for no other industry spends such a small part of its total turnover in wages. Were the same sum spent by the classes and the masses on boots, clothes, or furniture, or other normal peace time industries, the resulting employment would be five or six times greater.

I do not write as a teetotaler, and I see no immediate prospect of my becoming one, but as one who has had important work held up for days, while useful and sometimes highly skilled men went on the "booze," thereby keeping many other, often sober and industrious men from getting ahead with their work, I realise that the time lost due to intemperance, apart altogether from the money spent on drink, is a formidable item in the national balance-sheet.

III.—INDUSTRIAL BANKING.

Few outside those responsible for large engineering undertakings realise how the banking institutions of this country have failed to keep pace with the growing demands of industry.

In these days of specialised production an up-to-date factory producing high grade machinery may cost as much as £300 per man employed. Even extensions to existing works are costly when single machines may cost hundreds of pounds, and may even reach four figures. Manufacturing profits are not always such as will permit large accumulations of capital to be carried in order to meet prospective demands in this direction. On the other hand, the manufacturer is not always faultless; he will frequently start works extensions when a double shift would be more satisfactory.

A works costing many thousands of pounds ought

not to lie idle half the year, as is the case when no night shift is employed, and one of the features of German works management has been a striving after sufficient work to keep the works going night and day. This double shift, if well managed, nearly halves all establishment charges, and if not, there is the ingenious process of leaving the day shift product to pay the standing charges, and selling the product of the night shift some distance from the local market, or abroad, at a low price, and yet on very profitable terms, as it is produced in what is equivalent to a factory that has cost nothing.

As an example of German ingenuity in giving the employees the maximum amount of leisure with no diminution of output, the arrangement in force in some engineering works may be cited. The works start at 7 a.m. instead of 6 a.m., as in England, and run till 4.15 p.m., with fifteen minutes' interval. At 4.45 another shift starts and works till 2 a.m., with fifteen minutes' interval. Two nine-hour shifts are therefore worked, yet the workman has nearly two-thirds of a day to himself, and the factory gets the benefit of an eighteen-hour day, earning twice as much for the same capital expenditure.

This process of running a well-managed night shift and selling the product abroad at a low price is the real origin of the so-called dumping, and can be practised by Englishmen as easily as by Germans, and is in fact the settled policy of at least two large engineering firms in this country, though it is not well known.

The disinclination of banking institutions to assist industrial developments has seriously retarded the development of works of public utility. The slow development and almost painful struggles of the pioneer electric power and electric tramway schemes are a striking contrast to the rapid development and efficient financial wet nursing that is possible in the case of German schemes of a similar kind, nor is this financial assistance confined to purely internal German schemes. The Victoria Falls Electric Power scheme is only one example of German enterprise in British territory, and

the Buenos Ayres tramways an example in neutral territory. With both of these I shall deal presently.

How much German industry owes to the enterprise of her banks may be gauged from the fact that just before the war the Deutsche bank was financially interested in over 1,000 industrial companies, the Darmstadt Bank in about 300, the Dresden Bank about 400, while the Zurich Bank for electrical undertakings, originally founded by the Allgemeine Elektrizitäts Gesellschaft, not only finances electrical undertakings, but has extended the range of its operations to iron and steel works, general engineering, and to chemical works.

The writer was at one time associated with a large manufacturing undertaking on the Continent which grew during a period of twelve years from a works employing 2,500 hands to one employing 14,000 just before the war.

At no time did that firm defer the purchase of a single labour-saving machine for a day, or hesitate before reorganising a department or process of manufacture on account of the cost. Yet although its stock was widely held, and quoted on the German, Belgian and some of the Austrian Bourses, no widely boomed public issue was ever made. Money was found by the banks interested, and the stock was quietly unloaded through the Bourse by the banks' representative to a public that never failed to absorb the issue, because ever since its third balance-sheet the dividend had not fallen below $12\frac{1}{2}$ per cent., and had reached 17 per cent.

The financial return is in this case exceptional, but the methods are typical of the close association of the banks with the great manufacturing undertakings. I may add that the board of directors contained no guinea pigs, every director was responsible for a department, and all, from the Director-General down, were at the office between 8.30 and 9.30 in the morning.

The British public are not unfamiliar with the Victoria Falls and Transvaal Electric Power Company. The timidity of the British investor is well known, and I may remark well justified in many cases, and it seemed

hopeless to raise the money required—between $1\frac{1}{2}$ and 2 million pounds. A syndicate of German banks came to the rescue and subscribed for the debentures on condition that the contract for the equipment was given to German manufacturers, chief of whom were the Allgemeine Elektrizitäts Gesellschaft, in which the banks were interested. These contracts were placed with the German makers of the machinery at higher prices than would have had to be paid to English or American manufacturers, but those who paid the piper naturally called the tune.

Before the contracts were completed, the group of banks had unloaded the whole of their stock through the European Bourses, and the banks had the money ready to pay the contractors. The banks did very well, they got a profit by taking up the debentures on favourable terms, they made another profit by the gradual sale of the stock, they made still another profit for they were stockholders in the companies who carried out the contract.

Buenos Ayres Tramways is another example. It was started by an English company, but when it came to the large capital expense for electrification, this was arranged by German banks and the work carried out by German manufacturers.

To show the ramifications of German industrial finance, the case of the Solingen cutlery manufacturers may be taken as typical of another phase. Solingen is the Sheffield of Germany, and is not, as some people suppose, a Teutonic upstart bent on wresting from Sheffield its hard won honours, by fair means or foul (probably the latter). Solingen is nearly as old as Sheffield, sword making having been introduced from Damascus by Graf von Berg on his return from the Crusades about 1191.

The industry is one of the few that cannot be standardised owing to the fact that every country has its own pattern of cutlery, and Solingen vies with Sheffield in the multiplicity and excellence of its designs. The largest firm, Peter Henckels, have 9,000 different patterns of cutlery on their books. Here is an industry

differing in many essentials from the ordinary manufacturing business. How does Germany handle it?

Unlike Sheffield, much of the work, especially high grade work, is done at home, two-thirds of Henckels' employees work at home. Many of the employees own their own houses, have electric power supply laid on. How is it done?

The Landesbank of the province lends money for these houses on which the municipality guarantees 3 per cent. interest, and houses are built holding four to six families; these houses have a common workroom for those of employable age. When a workman has been at the business some years and has repaid his share of the home, or sold his share to a newly-married couple, he proceeds to achieve the height of his ambition by having a new house of his own. Here again the Landesbank lends its aid, and the ambitious cutler has a house of his own, a good garden, and a goat.

Observe how this method fosters habits of frugality and industry. A workman has a reasonable chance of gratifying his ambition. He is likely to do his best, as the more he does the more he gets. Notice how other collateral industries are fostered. The building trade, the maker of electric motors and grinding machinery, the local electric power supply authority, all benefit. It obviously does not matter whether it is a great factory costing millions of marks, or a home-worker's modest cottage, the banks are ready to lend their aid.

Did space permit, instances might be quoted of British firms doing a good and profitable business failing to get financial support when additional capital became necessary, and far-seeing German financiers by putting up the money acquired control of the firms, the British directors merely becoming employees of the German interest, which remained in the background. There is nothing to be said against this, it is merely evidence of business enterprise and resourcefulness which we might imitate with profit to ourselves.

IV.—CARTELS.

Perhaps the most potent factor in German industrial development has been the cartel, or syndicate, which by limiting or eliminating competition between firms in the same line of business has enabled these firms to secure advantages which they could not obtain if each had to fight by itself.

A fully developed cartel regulates prices for home and foreign trade, the proportion each firm gets, the volume of production, and the stocks carried. Less well developed cartels fix general conditions such as volume of production, supplies information as to markets, and so on.

Before the war there existed in Germany about five hundred cartels, a fifth of which existed in the metal and engineering industries. Even raw material was cartelised, the production of iron ore was controlled by the Siegerland syndicate, which represented some 35 firms. Three pig-iron syndicates controlled the smelting companies, while the Steel Works Union, located at Düsseldorf, controlled the steel output of nearly the whole German empire. Syndicates existed in the machine tool, agricultural machinery, and electrical industry, and their value is considerable in steadying markets, helping various firms to weather periods of trade depression, and so on; indeed it has been noticed that those industries which suffered least from trade depression were those which were most highly organised. Home prices were never allowed to "rot," any tendency towards a drop in home prices was instantly checked by exporting what was not required for the home market at any price rather than let it remain to be sold at home at a low price. It was considered better to sell a small part of the output abroad at a low price than let it remain to depress prices and lead to the whole output being sold at lower prices.

There are, of course, two sides to this question of cartels. It will be perceived by the discriminating reader

that the German buyer at home was systematically (shall I say?) plundered by the manufacturer.

If there were any bargains in machinery or other less highly manufactured goods, the foreigner got them. When the bargain sales were on, only the foreigner was allowed to participate in the benefit. How much this benefited Germany, and how far it was to the economic advantage of the country, I leave the reader to judge; even some Germans had their doubts! The process was largely helped by tariff restrictions. The most successful cartels existed in those trades which had most protection, but a tariff is not necessary for its success, for cartels have existed in industries which enjoyed no protective tariff at all.

V.—RAILWAYS AND CANALS.

Perhaps no factor is of greater importance to an exporting country than efficient transport. Exports may be fostered by bounties, but with the exception of sugar Germany has not made use of the bounty system. Such exports as have been "forced" have been engineered by cartels, or consist of selling at low prices surplus product which the patriotic German manufacturer would not sell to Germans, but did not hesitate to sell to foreigners.

No country in Europe has such an excellent system of trunk railways, supplemented by canals. They are a marvel of efficiency. Moreover, every system of canal haulage is used; horses, petrol towing locomotives on the bank, electric locomotives on the bank, and electric tow boats using a double trolley on the bank, and tugs with heavy oil engines, in addition to steam tugs.

Rates both on railways and canals are very low, and are specially favourable for goods booked through to German shipping ports. Railway rates are just about half the British rates for the same classification, though in some cases even less. Notwithstanding

these low rates the state railways earn very substantial profits, just about double those earned by British railways, one reason for this being the low capital cost of German railways. Fig. 1 shows the relative capital, cost and return of British and Prussian railways. The chief reason for the high cost of British railways is of course the high charges for land on which the

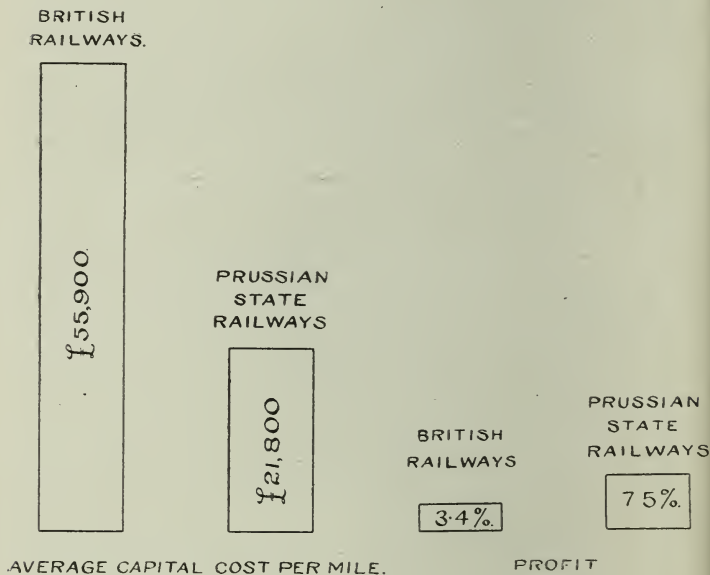


FIG. 1.

lines are built, the cost of buying out opposition to railway schemes, and the inevitable watered stock. It appears from the Board of Trade returns that out of the total capitalisation of British railways, about 1,400 million pounds, some two hundred million pounds represent watered stock on which interest has to be earned. The resultant high rates and their prejudicial influence on British industry is unquestioned; they have

been a frequent cause of complaint by traders. As an example, goods from Berlin to Hamburg can be sent for less than the cost of a similar class of goods from Birmingham to London.

Low as these railway rates are, canal rates are only about one-third of the railway rate. Running across the country are five great rivers—the Rhine, Weser, Elbe, Oder and Vistula. All these rivers are connected by canals which total up to some 7,000 miles. The rivers form arteries in which traffic to and from the canals flow, and Bavarian and Saxon goods travelling hundreds of miles by river and canal reach shipping ports at a lower cost than goods from the English Midlands, which have to travel a relatively insignificant distance. Moreover, there are through rates to shipping ports at 33 per cent. below the rate for goods over a corresponding distance but not consigned for shipment. If this were not enough to prove the careful organisation of inland transport, it may be added that in order to encourage trade with the Balkan States in pre-war days, a special low freight rate was introduced for goods destined to that district. One result of this encouraging policy was that in the year before the war out of 9½ million pounds' worth of goods imported into Roumania over 5½ million pounds' worth came from Germany, and the bulk of the industries were in German hands. The shipyards and engineering works at Galatz were owned by Krupp, and almost all the cloth, cement, and paper works were German owned.

In 1891, when the German harvest was poor, the railway and canal rates were specially reduced to facilitate the cheap transit of food and seed to the districts that had suffered most. This goes to show the flexibility and adaptability of the entire system of inland transport in Germany, and demonstrates the fact that organisation and adaptability are not confined to Teutonic warfare. The German recognises that peace hath her victories, and it will probably be the first thing he will think about when the war is over.

I may remark in conclusion that the goods entered and cleared from the city of Berlin by canal barges

is over ten million tons per annum, that is more than *all* the goods transported on *all* the railway-owned canals in England in a year !

VI.—CAPITAL AND LABOUR.

Among the factors generally supposed to have entered into Germany's calculations on the war was the possibility of labour troubles in England. The British workman, in German eyes, is intractable and independent, and one of Germany's mistakes was to assess this factor at an altogether erroneous value. Misunderstandings have arisen, but the average workman in Great Britain realises that in this war he is defending everything he has won in the past. The docile German workman, even when he is a Socialist, is often a spiritless automaton, whose last spark of independence has been effectively extinguished by the military training which he receives at the most impressionable period of his life.

German trades unionism is not nearly so aggressive as the robust English brand, and more can often be got out of the workman ; he will attend several automatic or semi-automatic machines when the Englishman will only look after one. Demarcation difficulties are not nearly so common. In England one group of workmen will dispute with another who is to do the work, or how long it should take ; they will even go on strike over it. How much of this is healthy independence and how much obstinacy I cannot say, but after considerable experience with some thousands of German workmen, and an acquaintance with the German engineering industry extending over many years, I only heard of one such case, and in that case the disputants selected four of their number to settle the matter—two from each side. The men took half-an-hour and a litre of beer apiece to settle it. How long it would have taken here, or how much it would have cost, I hesitate to say, but I have known a strike over a similar difficulty to last a week, and involve

two trades union secretaries in a journey of some hundreds of miles.

The problem of the early future is, Will master and man who have fought together in the trenches and have done their best in the factory, revert to their old mutually distrustful spirit? The economic war which is to follow will be fought out in the workshops of the British and the German Empires, or what remains of the latter, and it will require the patriotic co-operation of master and man quite as much as the actual fighting has done.

The "ca' canny" policy and the limitation of output will of necessity go; skilled artisans who have earned high wages during the war will be disinclined to revert to their trades union maximum. They will have discovered that a man's earning power is greatly in excess of his pre-war performance, and the only way to get it is to scrap the policy of limitation of output, and earn as much as possible. On the other hand, the working man naturally fears that the discovery by the employer that a man can earn far more than he has been doing will lead to a reduction of piecework rates or the introduction of such modifications of the piecework system as to make the earning power of the man little more than formerly, with much greater exertion.

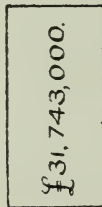
This overlooks two things. First the engineering industry is in the hands of a new generation of managers, who are generally men with a liberal education. These younger men recognise, as the old generation never did, that a broad-minded policy pays, that an army of contented employees, like a contented army in the field, is more likely to be a valuable fighting force than one in which every man feels he has a grievance. Secondly, and most important of all, self-interest will deter the employer from cutting rates, particularly in large, well-equipped modern works. The money spent on these works is so great that standing charges are as serious as labour costs, and the obvious policy is to pay labour well to induce them to get most out of the machinery. In these days a workman is often found operating a machine that costs £1,000; it is

worth the employers' while to pay a good wage to an employee who can get most out of it. A highly efficient machine that is deliberately "crabbed" is a loss to the employer, to the workman, and to the State; it is just as if the artilleryman refused to fire as many shells as his gun was capable of firing, or the machine-

AGGREGATE VALUE OF
BRITISH OUTPUT.



BRITISH
EXPORTS TO
ALL THE WORLD.



GERMAN
EXPORTS.

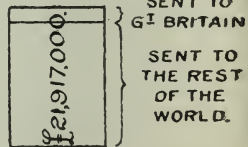


FIG. 2.

PRODUCTION OF ENGINEERING FACTORIES INCLUDING
MOTOR CARS, CYCLES, AND ELECTRICAL ENGINEERING,
NOT INCLUDING SHIPBUILDING AND MARINE ENGINEERING.

gun operator, instead of pumping the bullets into the advancing enemy at 600 a minute, got in 200 to 300 per minute, and refused to do more, as Smith, who had a machine-gun, did no better.

It was the intensified production of the German workman, backed by the latest and most efficient labour-saving tools, often of American manufacture, that enabled the German electrical manufacturer to almost entirely sweep American electrical machinery from the markets of Europe. Some of our readers will recollect that between 1890 and 1900 large quantities of American electrical machinery were shipped to Europe, chiefly slow and medium speed generators and traction equipment. Germany soon swept the Americans from the field, and before the war there was not a market in Europe, no matter how well protected by a tariff, that did not absorb considerable quantities of German-made machinery.

If we are to capture any considerable proportion of enemy trade, the hearty co-operation of employer and employee is essential. The British workman is the most efficient in Europe; his chief trouble is his disinclination to demonstrate his superiority. Unless some considerable expansion of individual producing power takes place, the sacrifices we have made will be in vain. Before the war the German exports of machinery (electrical, machine tools, etc.) was over 30 million pounds a year. Our total production (1907-8) was over 111½ million pounds, of which 31 million pounds* are exported (See Fig. 2). The census of production showed that the average output per employee in the engineering industry was £223 per annum. We have 501,000 people in the British engineering industry. (Of the total output of 111½ million

* In order to square these figures with the German returns, marine engines, ships, and products not common to both countries are eliminated in both German and British figures. These figures relate to 1907-8, the year of the census of production, because total production figures are only available for that year. This does not vitiate the results, as the figures are quoted to show their relative importance.

pounds only about one-half is net output, the other half represents material purchased from other industries. See the author on "The Engineering Industry and the Census of Production," *ELECTRICITY*, vol. 24, pp. 239-300.) The force available to produce all the German exports which we are expected to get will obviously be those permanently unemployed in the engineering industry.

Let us see how many people there are available? Unemployment in the British engineering industry varies from 2 per cent. during good trade to 12 per cent. during a severe depression; the latter is, however, very unusual, having only occurred four times in fifty years. Over any decade, except the last, when it has been exceptionally low, it appears that a fair average is 5.4 per cent.

If we deduct $1\frac{1}{2}$ per cent. for unpreventable unemployment, such as illness, temporary unemployment, trades disputes, and changes of occupation due to expiry of contracts, accidents, and so forth, we get a floating reserve of 3.9 per cent. or, in round figures, 20,000 people who are expected to produce goods which in the year before the war amounted to over 34 million pounds (see fig. 3), when, as we have seen from the figures revealed by the census of production, 150,000 people would be required; in other words, we have a floating reserve of unemployed mechanics who can only deal with $13\frac{1}{2}$ per cent. of the enemy trade. Who is going to deal with the other 86 per cent.? Since the census of production both British and German exports have grown (see Fig. 3); the latter are now approaching 36 million pounds, and notwithstanding our expansion in production since that time, and of which no figures are available, we are no better able to take over this great trade.

Moreover, this floating reserve of unemployed is not always available. During good trade such as we had for several years before the war there were on the average about 2,000 permanently out of employment in the engineering industry over the whole year, after making the deductions for sickness, strikes, etc., as

already indicated ; and how many of these were unemployable ? We thus find that when these reserves of unemployed men are most wanted they are no longer available.

It may be said that we can attract employees from other industries, and that there are other untrained men, or men in other industries, out of employment. True enough, but every unemployed man is not the type out of which an engineer or even machine attendant can be made. As for attracting employees from other industries, that is impracticable, as these other industries also hope to capture enemy trade, and instead of surrendering employees, will require to find more.

The producers of chemicals, dyes and drugs have to capture 42 million pounds' worth of German export trade (1912 figures). There is 21 million pounds' worth of trade in cotton goods, 6 million pounds' worth of sugar (beet), $1\frac{1}{2}$ million pounds' worth of cutlery, 60 million pounds' worth of iron and steel products, 6 million pounds' worth of glass, and $1\frac{1}{2}$ million pounds' worth of beer, all requiring the immediate attention of the industries concerned.

The capture of these millions will require as much generalship as the conduct of a great war, yet we have no Minister of Commerce !! The figures given for the engineering industry are typical of most other industries, and show that if we get one-tenth of the pre-war enemy trade we shall have done very well. The trouble in capturing the enemy's trade is that we don't have the people in the country to produce the goods. If we are going to take care of more than a small fraction of that trade, we shall want to build several new cities like Birmingham, Manchester, Newcastle and Glasgow, and we shall want people to fill them, instead of which we are losing the most virile and valuable members of the community.

VII.—TRADE AND TARIFFS.

It must be clear by this time that international trade is influenced by many variable factors. The exact influence which any one exerts cannot be accurately assessed; then, there is the most uncertain factor of the lot, the human element, the adaptability, ingenuity, and resourcefulness of the units which make up the total of the nation.

We have now to deal with the most controversial

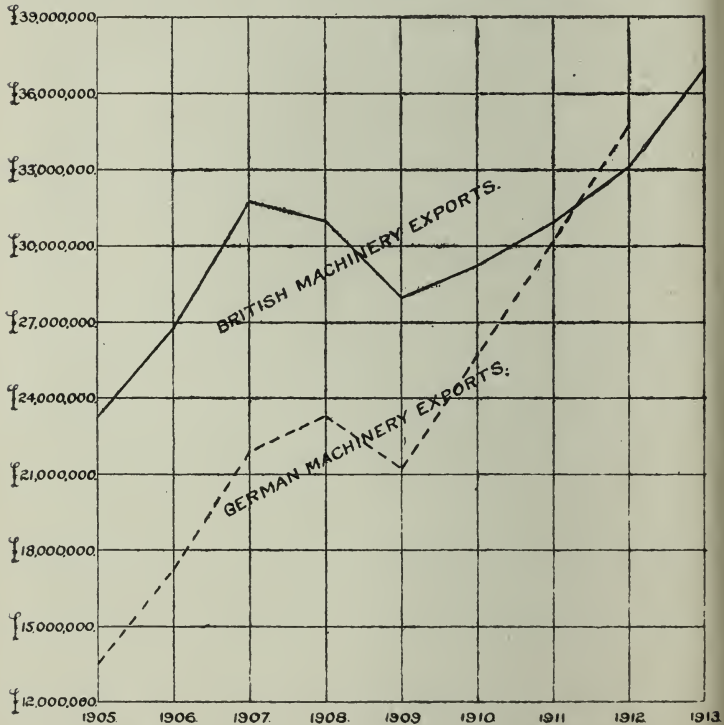


FIG. 3.

of the lot, and a difficult job it is, as the country is divided into two schools; one says—well, everybody knows what they say, and how they say it!!!

A stock argument is that Germany has two markets, her own and ours, and that if we keep her out of ours

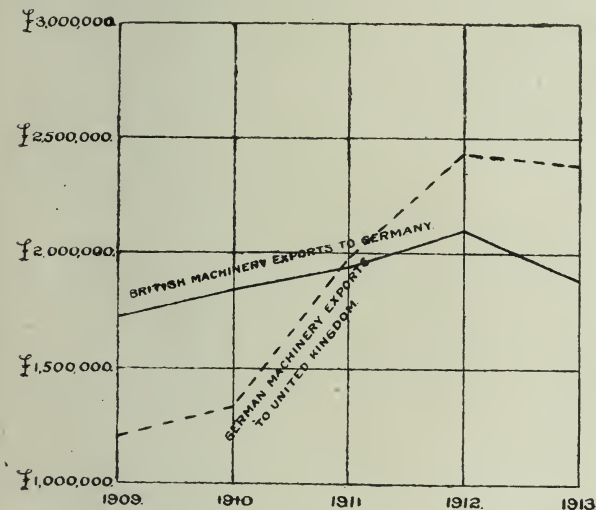


FIG. 4.

all will be well. This process of "stone-walling" Germany is very popular, but the hopeless inadequacy of the process will be clear from the following figures. Take the engineering industry first. The census of production revealed the fact that the gross value of the output of British engineering works was over 111 million pounds, of which $31\frac{3}{4}$ million pounds was exported. In the same year Germany exported 21 million pounds' worth of machinery, of which barely one-tenth went to Great Britain. These are set out in Fig. 2. The reader can picture in his mind the result of adding this to the total value of British

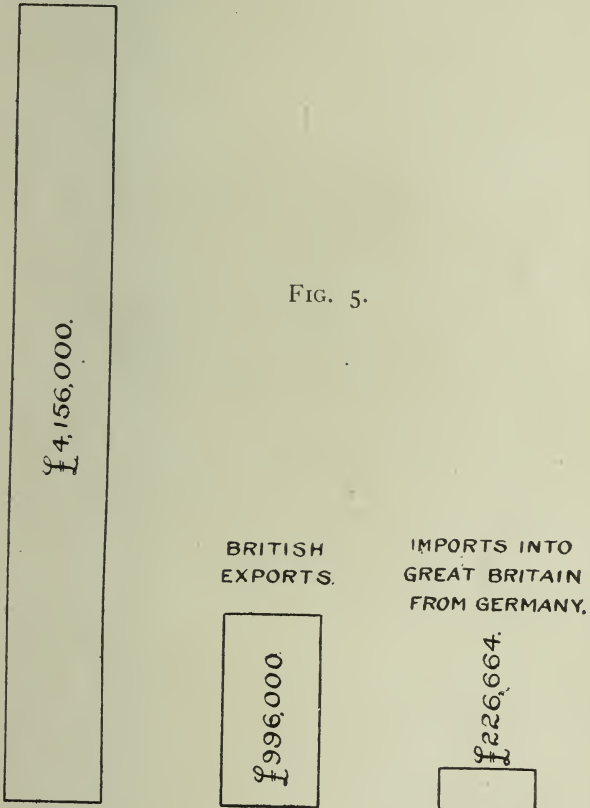
engineering output. The total prohibition of German imports would have such a small effect on the total volume of British engineering trade that it is doubtful if anyone would notice the difference. The relative progress of British and German engineering exports to all the world over a number of years is given in Fig. 3, while Fig. 4 shows the trade in machinery between Great Britain and Germany only. Again, take electrical machinery. Here is an industry that is popularly supposed to have been Germanised—indeed a well-known judge remarked some time ago that it was “a well-known fact that until the war we were dependent on Germany for most of our electrical machinery” (it was a case involving the performance of some electrical machinery). Are we?

The census of production revealed the fact that our production of electrical machinery and apparatus was over 4 million pounds per annum, and it has steadily increased since then. Of this amount £996,000 was exported. German exports of this class to Britain amounted to £226,664, or one-twentieth of our total production. (See Fig. 5.) If these were absolutely shut out—and the tariff that will do this has not yet been devised—would it ever be noticed? How much are we going to make out of an increase in production of 1-20th?

That Germany does not have our market at its command is obvious, and is borne out by the export trade of Germany in the years which followed the census of production. The tendency of Germany has been each year to send a larger proportion of her production to countries other than Great Britain. For instance, the production of chemicals, drugs and dyes is an industry in which German supremacy is recognised, yet less than one-tenth of Germany's exports of these come to England. We have heard much of Germany's practice of dumping iron and steel products into our markets, yet of her total exports in 1913, over 60 million pounds, only a little over one-tenth came to this country; the rest of the world purchased nearly 90 per cent. of her exports.

Isolated instances of German predominance, sugar beet* for example, may be cited, but we have never made any serious attempt to compete ; when we have

BRITISH PRODUCTION



ELECTRIC MACHINERY AND APPARATUS.

* Much of this comes from Holland and Belgium.

done so we have invariably reduced German imports to such a small fraction that their total exclusion, if that were possible, would add no appreciable amount to our prosperity.

It is clear, I think, that a tariff is merely a negative policy; it could only hit a small fraction of German trade. We must attack the German manufacturer in the markets of the world. To do that requires positive, not negative, virtues. Greater output from men and machines, better organisation of our export trade and inland transit, and a careful study of foreign systems and markets. A tariff, which some manufacturers think is all that is necessary for their salvation, would only induce a false sense of security; it might even prove a handicap.

One of our most serious national defects is that we avoid constructive thought. Everything muddles along somehow; nobody co-operates effectively with anybody else to achieve anything. Even employers' organisations, and trade groups, tend to fall to pieces the moment any attempt is made to bind the units which form them into a more effective agency. The great trusts of America and the no less powerful cartels or syndicates of Germany, represent not only mutually defensive, *i.e.* negative, associations, but aggressive and enterprising organisations possessed of a positive policy.

It is characteristic of these great business associations that they embody the best brains of the country, they are no mere agglomeration of allied firms, but they possess an organisation which is composed of lawyers and bankers as well as manufacturers and engineers.

In these days when some newspapers are conducting a campaign to get rid of lawyers in the Government, and introduce business men, one must not lose sight of the fact that many large and prosperous undertakings, both in America and Germany, include lawyers in their management. Indeed, the success of at least two of America's leading trusts is due more to a knowledge of the law than to acquaintance with the busi-

ness; and if another argument were necessary, the fact that most lawyers are engaged a good part of their time in getting business men out of the difficulties into which they have blundered, would supply it.

No tariff wall we can erect round our country can do more than protect a very small fraction of our trade. The census of production revealed the fact, hitherto obscure, that, important as external trade is, it shrinks into relative insignificance beside the colossal total trade of this country. To secure a large share of German trade abroad requires, first of all, cheap production, and cheap production can only be secured by large scale production and low cost of materials for manufacture. Cheap labour is not essential, as we see in the case of America. A well-paid and contented democracy is a valuable asset to any country. The only way to get greater production is to secure a greater share of the world's trade, and in this business, especially in poor countries, price is of more importance than any other factor. One of the first effects of a tariff would be to raise prices; if it does not do so, it is of no value to most people who want it. The manufacturer who in pre-war days sold machinery to me, tells me that his price is a low one to beat American and German competition; remove that competition, or artificially raise that price by means of a tariff, and up goes his price. If the price of machinery goes up, the standing charges of my works are increased, and this must be added to the cost of the machinery I make, as of course I buy machinery to make more machinery of a different kind.

My product now costs more to make than before. Moreover, I hope to make a bigger profit on a higher-priced article because my continental rivals have had their prices artificially raised by the import tariff; so I now sell machinery in a protected market to ship-builders, locomotive builders, and bridge builders at higher prices, and if these men pay higher prices for all their machinery and higher prices for iron and steel—for we must protect the British steelmaker from foreign competition—how can we build cheaper ships,

locomotives and bridges? And how are we going to retain the world's trade if our prices are increased?

It may be suggested that to encourage export trade, bounties, or drawbacks equal to the duty paid, may be paid to the firms making goods for export, as is done in some countries. This, by the way, is an admission made by advocates of a tariff that a tariff does raise prices. It is quite easy to do this in the case of a man who buys steel and converts it into ships, bridges and the like. It has been done in France for years, but who is going to assess the proportion of standing charges which are due to the higher cost of his machinery and equipment, or the higher wages and staff charges due to the higher cost of living? Despite every effort to foster industry in France by protective duties on materials and drawbacks on ships and manufactured goods for export, French shipbuilding, bridge building, and locomotive building have never flourished outside a limited and protected home market, while Germany, which has absolute free trade in shipbuilding and no protective tariff on steel, has flourished almost as much as England in these staple industries, while in the chemical industry, which is absolutely unprotected in any way, Germany was supreme.

If it is necessary to find a more convincing argument on the inadequacy of a tariff to meet the case, we have only to select dyes and chemicals. America had a very heavy tariff against German dyes and chemicals, yet at the outbreak of the war she found herself quite as dependent on German dyes as we were; while France had a still higher tariff against German products of this kind, yet she was even more dependent upon Germany than the others. A tariff by itself is obviously no remedy or these cases could not exist.

Further, were we to "protect" ourselves by a tariff, such protection means a limitation of the sources of supply, or higher costs, perhaps even poorer quality dyes, we should inflict serious damage on the British textile industry by imposing a handicap on 40 million pounds' worth of British exports of dyed and printed

fabrics. The internal trade in these goods is many times as great as this, but here the trouble would only be higher prices, and possibly reduced demand because of these higher prices. Our export trade is, however, dependent on the price and quality of the goods, and how are we going to increase the trade in dyed or printed textiles if they cost more or are poor in quality. The prosperity of Lancashire and Yorkshire depends to a large extent on that industry. Moreover, our trade in textiles is nearly a hundred times greater than our trade in dyes.

I trust it is clear that the argument is not against a tariff so much as it is against any policy which makes the materials, whether they be dyes or anything else, that are essential to any industry more expensive in this country than in any other country.

The German electrical industry derives scant protection from the tariff, as I discovered, when sending this class of goods into that country, the duties amounted to less than five per cent. of the value.

Germany's heavy tariffs chiefly benefited the agrarian party, who had most political influence.

I trust it will now be clear that Germany's rise and progress in industrial matters was helped by many other things, beside which a protective tariff shrinks into relative insignificance, and that her greatest successes, viz., shipbuilding and the chemical industry, were gained with no tariff protection at all, so that credit must be given to better education and more capable organisation in industry and finance, even if we overlook the beer and sausages; and if we are going to succeed in reaping the benefits we expect, we must rely on the same factors.

It may be that Germany will not in future enter the Allies' markets on terms of equality, as hitherto, but a race so resourceful is not going to be put out of the struggle on that account. She will compete more fiercely for such neutral markets as are open, and by her unique powers of adaptation, so adjust her methods to circumstances that she will gain access even to the most highly protected markets. In pre-war days Germany was just as successful in entering markets in

which the tariff was heavily against her as she was in more open markets. Goods were designed to meet these markets. When price could not gain a footing, the requirements of the customer were carefully studied, and goods which appealed to his taste were supplied on trading terms which were no less tempting. All these expedients, and other new ones, will be exploited to the utmost, but it must be clear that the battle is one of intellects, and what will the result be when the Allies have to match the best educated race in Europe? Will the stunted intellects that have been the victims of parsimonious education authorities ever realise that the country that saves a million pounds a year on education, must lose many times that amount in the intellectual battles of the future?

Neutrals who have visited Germany during the war tell us that in order to save the economic situation, and when the war is over to quickly regain the markets of the world, Germany has been making for stock on a colossal scale. By employing women, and men otherwise unfit, in trades not essential to the production of munitions of war, large stocks have been accumulated. This has helped the economic problem by providing employment for large numbers of women who get an inadequate separation allowance.

The German Government apparently pay up to 90 per cent. of the value of the goods. With this payment the manufacturer produces more goods, and so on. When the war has finished, Germany will have no gold reserves. Her securities will have vastly depreciated; they may possibly be unsaleable. She will therefore be unable to pay for the huge imports that are required immediately peace is declared, except by the export of goods, so that these huge stocks now being accumulated represent her only hope of paying for what she must get from the outside world. Even if she sold these goods at a sacrifice, which is likely, she must get them into the world's markets, and thus we see prospects of the greatest "dump" in the world's history—a dump which, if it does not restore some part of Germany's trade in Allied countries, will cer-

tainly do so in neutral countries, and the shock tactics of the war will be repeated in the trade war, and what tariff can withstand it? No known method can prevent a man buying what he likes, from whatever source he pleases, and if it is attractive in price the sale of the goods is more likely.

If I have succeeded in assisting the reader to grasp the possibilities of the business situation, and, I hope, shown it in its true perspective, enabling even a few of my readers to appreciate the fact that the problem of industrial success is many-sided, and consequently incapable of solution by the application of any one remedy, I shall consider my work has been of some service.

The reader must not forget that British brains are inferior to none. The mere fact that we have reached such a commanding position in international trade, while handicapped by so many apparent disadvantages, proves that the quality of British manhood is second to none. Our financial system and our credit has stood the strain of the war better than any other country. We finance our Allies, we bear a heavier burden than any of the combatants, and bear it with greater ease.

Personality counts, and offsets many disadvantages, while there are characteristics so subtle and elusive as to defy analysis; these seem to have enabled Great Britain to achieve and retain a commanding position.

What can yet be done with a more perfect organisation, a better system of inland transit, better education and more intense production, can only be conjectured. We must avoid sudden and revolutionary changes. The great fabric of British finance and commerce has been woven by the best brains and the finest intellects during the centuries that have passed. It is a complex design, and alterations must not be made rashly or merely to be avenged on an enemy—sound business cannot be built on a foundation of revenge.

Education, and the production of a race of men, better physically and mentally, are essential. The successful man is invariably a healthy man, while the

failure is often a degenerate. Mental and physical bankruptcy usually precede financial bankruptcy. The healthy man is never a failure. Man was made for success; by constantly striving after improvement he can deserve it, and by deserving it he can usually command it.

If I have drawn conclusions it is because it is impossible to avoid doing so; the reader is level-headed enough to form his own opinion of their value, and I now leave to him the duty of doing what he can to strafe der Hun in a peaceful yet effective manner.

VIII.—A SUGGESTED REMEDY.

This has been entitled a remedy because other and more ancient remedies have to be treated with respect. It cannot be claimed as "the" remedy, but to satisfy those critics who gently chide the author for having told a horrid nasty tale, and shattered some of their most cherished illusions, leaving nothing satisfactory to take its place, it has been thought desirable to offer a remedy.

Tariffs of any kind, even if they were likely to prove effective, will provoke a long and bitter controversy. During the time we are quarrelling and holding elections, wasting ink on paper, and hot air on an uninterested public, the wily Teuton will be gathering together, and reorganising, his sadly damaged trade; we may reach some kind of decision too late to be of much use.

It is probably agreed: (1) that more specialised education is wanted; (2) that education should be continued, so far as the mass of the people are concerned, beyond the ordinary school age, and that this additional education should not depend solely upon evening classes, as many artizans are not physically capable of profiting by it, and consequently much of the money spent on evening classes is wasted; (3) that financial support for fresh enterprises must be more easily obtained by means of industrial banks or otherwise. (4) That employer and employee should co-operate in the trade war as they have in the fighting line and the munition

factory; (5) inland transport to be reorganised, co-ordinated and brought up to date.

That successful competition is the result of specialisation by skilled and educated workers cannot be questioned, but the crux of the matter is, How shall we protect our trade? Is there a substitute for tariffs which does not suffer from its disadvantages, *i.e.*, enable the producer to exploit the home buyer, or inflict disadvantages on collateral industries due to high prices, instances of which have been cited in earlier pages? These are the recognised evils of protective tariffs in all countries.

One result of the war has been, the author hopes to show, to place at our disposal an organisation ready for the task.

We must first admit that some industries do need safeguarding in some way. Even if we admit that all require some protection, we do not damage the case, but strengthen it, and also that a Ministry of Commerce is essential if the growth of British industry is to be guided and assisted as it should be.

The war has called into existence one of the greatest and most efficient organisations that Great Britain ever enjoyed, the Ministry of Munitions. It has recently shown some tendency to strangle itself with its own red tape. It is true it has also made mistakes, and it has been criticised; the organisation that never makes mistakes or is above criticism will never exist, so we can get along very well with what we have now.

Reconstitute this great organisation as a Department of Industry and Commerce under a Minister of Commerce with Cabinet rank. During its brief existence the Ministry of Munitions has dealt with every form of industry.

"Munitions" are not merely guns and shells, but chemicals for high explosives, textile goods, and their production has involved the control of every kind of factory from the great shipbuilding yard, the well-equipped distillery, the chemical factory, the engineering works, from the most highly specialised machine tool works to the little engineer's shop in a back street

producing, it may be, a few dozen shell base plugs per week.

A department which has acquired such a vast amount of experience should not be allowed to disperse at the close of the war, as if it had served its turn and become obsolete: The fact is, great as has been the need for this organisation in war, its use for peaceful industrial development is imperative.

It is not suggested that the Department should take effective control over industrial establishments, but whether we have a tariff or not, some great commercial administration is necessary—it is desirable to have an organisation to support industries, especially new ones, and essential or key industries which cannot stand the blast of competition without State aid.

This recognition of the principle of State assistance is not new, but it has hitherto usually been achieved by a tariff, though there is no reason why it should not take another and more easily controlled form, such as will prevent the protection given by the tariff from filling the pockets of the few at the expense of the many.

This State aid might take the form of government grants, or a subsidy, or the State might guarantee a certain interest on the money sunk in establishing new industries, or in helping old ones to weather a period of serious competition.

This principle is already recognised in various ways. It is common for a State to guarantee interest on the bond issue of a new railway or steamship line for a term of years. Something of the kind has already been done by the British Government, and what has been done in railways and shipping can be done in other branches of commercial activity.

There is no harm in the State recognising that if one sinks capital in a business he is entitled to expect a reasonable return for that money; this is still more apparent from the fact that not only the individual who sets up the business but the entire community benefit from its success and lose by its failure.

The business of the Ministry of Industry and Commerce is to see that the State subsidised business is carried on

to the public advantage, that efficient processes and good plant are employed, that it is not overstaffed and the staff overpaid. All these things are now being watched in thousands of factories by the Ministry of Munitions, and if it can be done so effectively in war, surely it can be done during the commercial war that is to follow.

Every business need not be controlled by the Ministry of Industry and Commerce, just as every business is not now controlled by the Ministry of Munitions ; but every business that desires State support should consent to be State controlled while it gets any public money.

This has been a commonly accepted practice during the war, and it is not a long step to adapt it to peace conditions. Moreover, is it not the case that the resultant efficiency and economy have amply justified the practice ?

It does not destroy individual initiative or enterprise ; a firm need not be controlled if those managing it do not wish State support. Some, perhaps many, may never need it, but a business gets a fair chance to succeed or to weather a period of intense competition from whatever external cause.

There are many difficulties, but the Ministry of Munitions had to get over greater difficulties in a hurry—and did it.



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